

Environmental Assessment

for the

**Construction of Power and Fiber
Optic Transmission Lines for Facilities
in the
Yukon Training Area, Alaska**

354 Fighter Wing
Eielson Air Force Base, Alaska
September 2003

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**FINDING OF NO SIGNIFICANT IMPACT (FONSI)
and
FINDING OF NO PRACTICABLE ALTERNATIVE (FONPA)
for the
Construction of Power and Fiber Optic Transmission Lines for Facilities in the
Yukon Training Area, Alaska**

Introduction

The 354th Fighter Wing (FW) operates, maintains, and trains combat forces in close air support and interdiction missions in support of the war plans in three operational theaters. The 354 FW's mission is to train and equip personnel for close air support of ground troops in an arctic environment. The range combat training facilities operated by Eielson Air Force Base (AFB) are some of the finest in the world. Each year the 353rd Combat Training Squadron, based at Eielson AFB, conducts four joint training exercises with Elmendorf Air Force Base, as well as other US Air Force (USAF) units and units from allied countries. The Air Combat Maneuvering Instrumentation (ACMI) system was installed on US Army range lands that comprise Eielson AFB's range facilities. The continued efficient and reliable operation of this range facility and training program is of vital importance to Eielson AFB's mission.

Description of the Proposed Action

The proposed action will result in the construction of approximately 27 miles of electrical transmission and fiber optic communication lines from the Eielson AFB power plant to various locations within Fort Wainwright's Yukon Training Area (YTA), Alaska. The fiber optic cable would be collocated on the power line poles, with the point of origin at the Cope Thunder range operations facility on Flightline Avenue. This power and communications system will significantly enhance the operational efficiency and reliability of the range, as well as cut operational costs by replacing expensive constant run diesel generators.

Alternatives to the Proposed Action

There were two alternatives to the proposed action. Alternative 1 would construct a power and fiber optic line to Pole Hill, a major communication hub for range operations. This system would be half the length of that planned for the proposed action and would only supply about half of the facilities. The second alternative would replace the existing constant run generators with wind generation systems located at Pole Hill and Camera Site II. The generators would still be kept in place, but would only run when the wind generated power was not available.

No Action Alternative

The no action alternative would result in continued operation of existing facilities. Pole Hill, Camera Site II, as well as other intermediately located facilities would continue to be powered exclusively by continuous run diesel generators. The scheduled repair/replacement program would still be undertaken under this scenario, as it would be essential for the long-term operation of the range systems to maintain existing infrastructure.

Environmental Impacts of the Proposed Action

Wetlands

The proposed project will result in impacts to 0.05 acres of scrub/shrub and black spruce wetlands. These wetlands are of relatively low value and are situated in close proximity to the existing road system, further reducing their functional value due to disturbance from road traffic.

Biological Resources

Impacts to biological resources from the proposed project are expected to be minimal. The power line will follow an existing road right-of-way. Relatively little clearing will be done to install the line, and where clearing is needed it will be done by hydro-axe. This will likely enhance the areas as browse habitat, especially for moose and snowshoe hare.

Threatened or Endangered Species

There are no threatened or endangered species in the project area. The project area is not suitable habitat for any of the threatened or endangered species occurring in the Alaskan interior.

Historical or Cultural Resources

Most archeological sites on the Army's Yukon Training Area lands have been identified and mapped. The Proposed Project is not associated with any known sites that are eligible for listing on the National Historic Register. In the event that historic or cultural sites are discovered during project construction, activities will be halted and a professional archeologist will evaluate the find.

Air Quality

The proposed action will have minor air quality impacts during construction due to fugitive dust and machinery exhaust. Such impacts will be highly localized and temporary in nature. In the long-term, the air quality of the area will be improved due to reduced diesel generator operation emissions.

Mitigation

No mitigation was required by state and federal agencies for any aspect of the proposed work.

Public Comment

No public comment was received from the public noticing of the Draft EA/FONSI/FONPA or the Corps of Engineers 404 wetlands permit for this project.

Findings

Pursuant to the National Environmental Policy Act of 1969 (NEPA), the Council on Environmental Quality (CEQ) implementing regulations for NEPA (40 CFR Part 1500-1508), and Air Force Instruction (AFI) 32-7061, *Environmental Impact Analysis Process* (32 CFR Part 989), the Air Force has conducted an EA for the construction of a power and fiber optic communication line to the Yukon Training Area range. This FONSI/FONPA has been developed pursuant to information provided in the accompanying EA.

Finding of No Practicable Alternative: Eielson AFB is an Air Force facility that operates, maintains, and trains combat forces in close air support of military operations worldwide. Eielson AFB must have reliable and cost effective training facilities in its training ranges to meet its strategic mission. Taking all the environmental, economic, and other pertinent factors into account, pursuant to Executive Order 11990, the authority delegated by SAFO 780-1, and taking into consideration the submitted information, I find that there is no practicable alternative to this action and the proposed action includes all practical measures to minimize harm to the environment.

Finding of No Significant Impact: Based on this Environmental Assessment (EA), which was conducted in accordance with the requirements of NEPA, CEQ, and Air Force Instructions, I conclude the construction of a power and fiber optic communication system to the Yukon Training Area Range will not result in significant impacts to the environment. I also find that the preparation of an environmental impact statement (EIS) is not warranted.



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**Environmental Assessment (EA)
for the
Yukon Range Power and Fiber Communications System**

1.0 Purpose and Need for Action

Section 1.0 provides a description of the purpose and need for the proposed action.

1.1 Background and Objectives for the Proposed Action

1.1.1 In support of Eielson AFB's range operations, a 27-mile system of power and fiber optic lines would be constructed in the US Army Alaska's Yukon Training Area. The system would connect a series of existing range facilities with Eielson's power and data grid, reducing operational costs and increase system reliability.

1.1.2 Eielson AFB was established in 1944 and is currently part of the Pacific Air Forces (PACAF) Command. The 354th Fighter Wing (FW) operates, maintains, and trains combat forces in close air support and interdiction missions in support of the war plans in three operational theaters. The 354 FW's mission is to train and equip personnel for close air support of ground troops in an arctic environment. The 168th Air Refueling Wing (ARW) is the primary tanker unit of the Pacific Rim, annually transferring over 17 million pounds of fuel in flight to predominantly active duty aircraft.

1.1.3 In support of their mission, the host unit at Eielson AFB, the 354 FW operates F-16 Fighting Falcon aircraft and A/OA-10 Thunderbolts. The 168 ARW is also based at Eielson AFB and currently flies KC-135 aircraft.

1.1.4 In the early and mid 1990's, the United States Air Force (USAF) established in Alaska an advanced, instrumented air-to-air and air-to-ground training and bomb scoring range to support Pacific Air Forces (PACAF) operations in general and specifically the 354 FW at Eielson AFB. The Air Combat Maneuvering Instrumentation (ACMI) system was authorized by Congress to facilitate changes in the force structure of the USAF. The move was also intended to support an increase the number of large force exercises and joint training exercises conducted in Alaska.

1.1.5 The range combat training facilities operated by Eielson AFB are some of the finest in the world. Each year the 353rd Combat Training Squadron (CTS), based at Eielson AFB, conducts four joint training exercises with Elmendorf Air Force Base. Each Cope Thunder exercise is a multi-service, multi-platform coordinated, combat operations exercise tailored to the operational capability of participating units. The exercise has grown into PACAF's "premier simulated combat airpower employment exercise." All Cope Thunder exercises take place over Alaskan and Canadian airspace. The entire airspace is made up of 17 permanent military operations areas and high altitude training areas, plus two restricted areas, for a total airspace of more than 66,000 square miles. The continued operation of this range facility and training program is of vital importance to Eielson AFB's mission.

1.1.6 The ACMI system was constructed primarily on military lands within existing ranges in the interior of Alaska. A portion of the system is located in Fort Wainwright's Yukon Training Area (YTA) east of Eielson AFB lands. Currently, continuous run diesel generators and/or propane gas power all remote components of the ACMI system. The operation and maintenance of these types of power systems is expensive, manpower intensive, and results in significant periods of operational down time. An essential criterion for selecting viable alternatives for this project is that the alternative selected must be mechanically reliable and easily maintained, especially during the cold winter months when outside maintenance is difficult.

1.1.7 The USAF is proposing to construct approximately 27 miles of electrical transmission lines from the Eielson AFB power plant to various locations within Fort Wainwright's Yukon Training Area (YTA), Alaska. In addition, a fiber optic communication cable would be collocated on the power line poles, with the point of origin at the Cope Thunder range operations facility on Flightline Avenue. This power and communications system will significantly enhance the operational efficiency and reliability of the range, as well as cut operational costs.

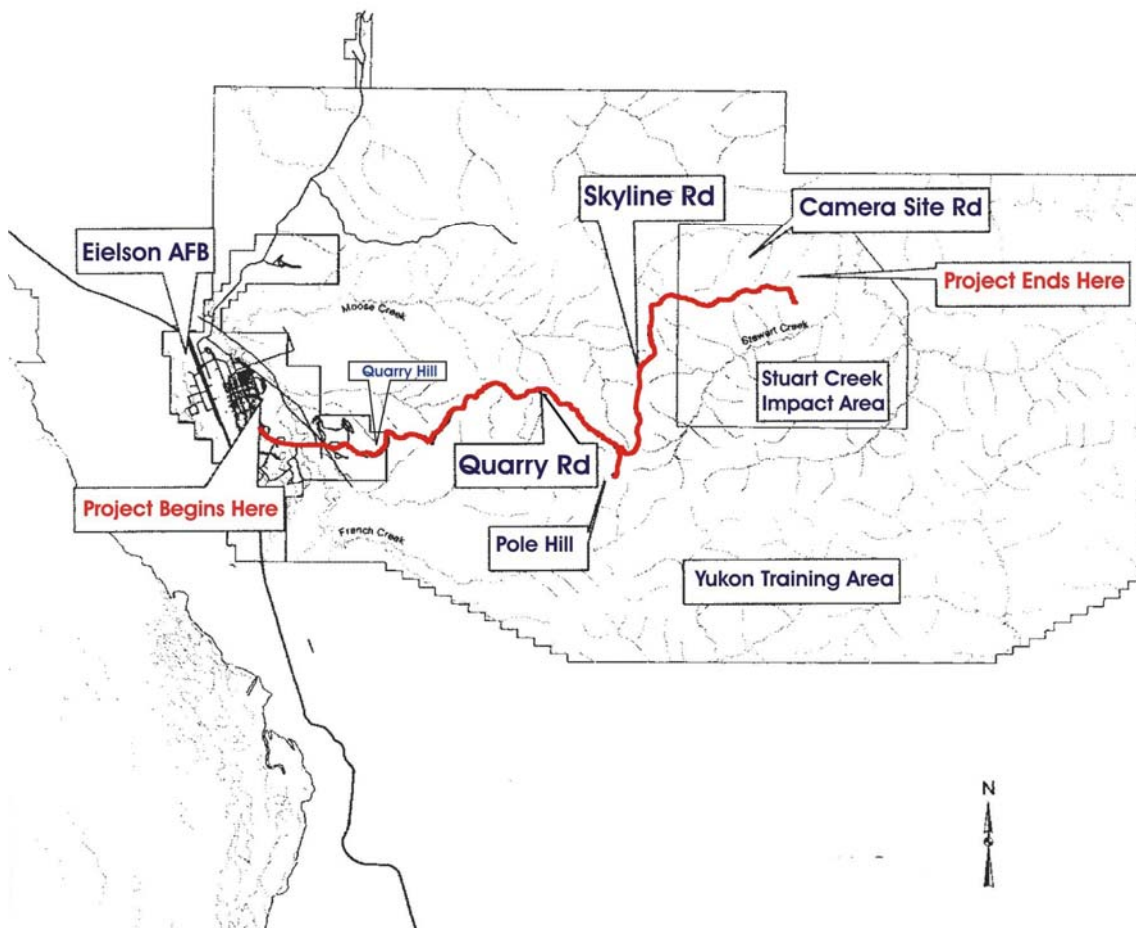


Figure 1 – Power Line Project Location

1.1.8 The power system would be comprised of three segments (see **Figure 1**). The first segment would run between the Eielson power plant and Quarry Hill and would basically be an upgrade of an existing line that follows the same route. The second segment would follow

Quarry Hill Road to the intersection of Quarry Hill Road and Skyline Road where it would split with a feeder line going to the Pole Hill communications facility. A road near this intersection that goes to Pole Hill would be followed as a route for the power line. The third segment of the power supply system would be a continuation of the main line to Camera Site 2, following Skyline Road, and connecting six Unmanned Threat Emitters (UMTEs) located in the vicinity of the road corridor.

1.1.9 Both Pole Hill and Camera Site 2 are important components of the range's ACMI system and the UMTEs are an integral part of the training system. Providing power and a hard wire data link to these sites would be extremely beneficial. The communication facility located at Pole Hill serves as a crucial communications and tracking relay site and is one of eight relay sites that compose the Pacific Alaskan Range Complex (PARC) Data Link (PDL). This data link carries all the data to and from the PARC and is used to transmit real time data between Eielson AFB and the PARC remote sites.

1.1.10 The Pole Hill and Camera 2 communications sites are each presently powered by two manual-start, MEP 806, 60-kilowatt (kW) diesel generators. One generator is used to power the facility and the other is maintained on stand-by in the event of scheduled maintenance or mechanical failure to the primary generator. The communications site requires a minimum 30 kW power source. The fuel (JP-8) is supplied from a 10,000 gallon above ground fuel storage tank. The above ground fuel storage tank is refueled on a monthly basis using tilt/slide bed trucks capable of carrying two to three 600-gallon fuel pods. Records indicate that approximately 26,000 gallons of fuel was used during FY 2000. The UMTE sites are powered by propane gas generators and also require frequent refueling.

1.1.11 The diesel generators are constant-run and have proven to be prone to mechanical failure. Depending on road conditions, it takes personnel approximately 40 minutes to respond to a power failure and manually start the stand-by generator. When the Pole Hill site loses power, all communications and data from the entire north and east portions of the YMA including the Stuart Creek Range are lost, effectively cutting the PARC data link. By losing the north and east portion of the range, the Air Force loses aircraft tracking through two of the four Yukon Measurement Debriefing System (YMDS) master sites and from a search radar (AN/TPS-63) located at Hill 3265. Power failures also prevent the use of ground-to-air radios and land mobile radio repeaters and sever communications with Stuart Creek weather stations. In short, all information coming from the YTA and the Military Operating Areas (MOAs) north and east of Eielson AFB is lost in the event of a power failure at Pole Hill.

1.1.12 The power supply and communication systems currently in use in this portion of the PARC system are scheduled for an overhaul and/or replacement program. An estimated cost for this program with recurring operation and maintenance costs for the next five years included is \$5,429,274.

1.2 Location of the Proposed Action

1.2.1 Eielson AFB is located in the Tanana River Valley on a low, relatively flat, floodplain terrace that is approximately 2 miles north of the active river channel. Other communities near

Eielson AFB include Moose Creek to the north and Salcha to the south. Base lands include 19,790 contiguous acres bounded on the west by the Richardson Highway and on the north and east by Army's YTA. To the south, the community of Salcha borders Eielson AFB.

1.2.2 Fort Wainwright's YTA is located just east of the Eielson AFB line and is approximately 30 miles east/southeast of Fairbanks, Alaska (**Figure 2**). The YTA contains approximately 260,000 acres and is located within the Fairbanks North Star Borough. The proposed electrical transmission line would be constructed adjacent to Quarry Road starting at the Central Heating and Power Plant (CHPP) on Eielson AFB, and terminating at Camera Site 2 in the Yukon Training Area.

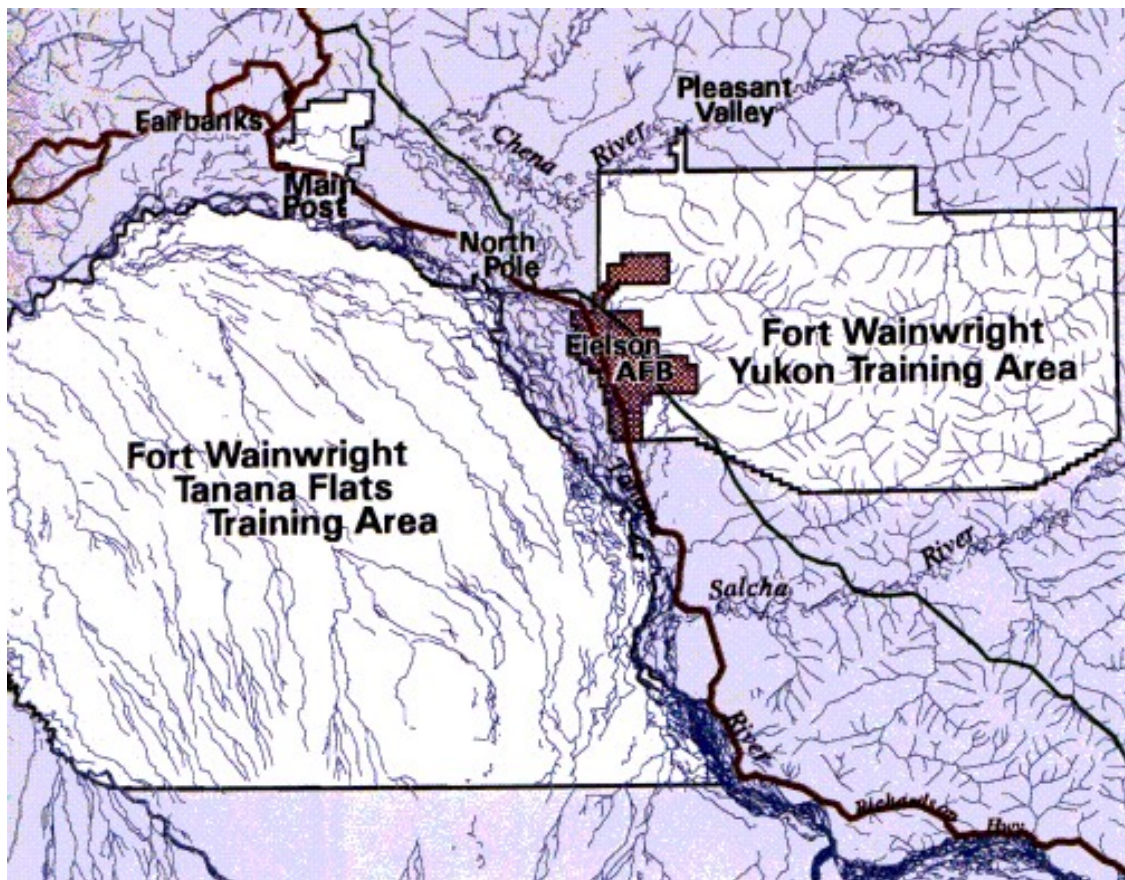


Figure 2 – Location of Project Area

1.3 Alternatives to the Proposed Action

In addition to the Proposed Action, two action alternatives, and the No Action Alternative, are considered for analysis in this EA.

1.3.1 Alternative 1 – Construct Power and Fiber Optic Line to Pole Hill

Under this alternative the power line and fiber optic line would extend from the CHPP to Pole Hill. The line would be approximately 14 miles long and follow the Quarry Hill Road corridor.

Power and fiber optic lines to this location would provide electrical power to a major communications relay facility that receives data from the rest of the Yukon Range target facilities.

1.3.2 Alternative 2 – Installation of a Wind Energy System with Diesel Powered Backup Generator

Under this alternative, a 50 kW wind turbine mounted on a 172 foot Guyed-Lattice tower would be installed at Pole Hill and Camera Site 2. A diesel powered backup generator with automatic start would be incorporated into the system to provide power during periods of low wind.

1.3.3 No Action Alternative

1.3.2.1 The no action alternative would result in continued operation of existing facilities. Pole Hill would continue to be powered exclusively by continuous run diesel generators. The scheduled repair/replacement program would still be undertaken with this scenario, as it would be essential for the long-term operation of the range systems to maintain existing infrastructure.

1.4 Decision to be Made

1.4.1 As required by 32 CFR Part 989, the *Environmental Impact Analysis Process* will be used to determine what are the environmental consequences of the proposed construction of a power and fiber optic line to Yukon Range. This EA is intended to satisfy these requirements. The proposed action and all alternatives listed in Sections 1.3 will be addressed in detail in Chapter 2.0 of this document. A description of the resources associated with the areas affected by all alternatives will be provided in Chapter 3.0 and the impacts that could result from each one are discussed in Chapter 4.0.

1.4.2 Based on the evaluation of impacts in the EA, a Finding Of No Significant Impact (FONSI) will be published if there is a finding of no significant environmental impacts for the proposed action. If it is determined that the proposed action will have significant environmental impacts, other alternatives will be considered for which impacts may not reach the threshold of significance.

1.4.3 The EA, a draft FONSI (if applicable), and all other appropriate planning documents will be provided to the Pacific Air Forces (PACAF) Vice Commander, the decision maker, for review and consideration. If, based on a review by the decision maker of all pertinent information, a FONSI is proposed, a notice of intent (NOI) will be published in accordance with 40 CFR 1506.6. All interested parties will have 30 days to comment on the decision to the Air Force. If, at the end of the 30-day public comment period, no substantive comments are received, the decision maker will sign the FONSI.

1.4.4 Two Executive Orders (EOs), 11988 and 11990, require the heads of federal agencies to find that there is no practicable alternative before the agency takes certain actions impacting wetlands or floodplains. The proposed action would potentially impact only wetlands. To address this requirement, the Secretary of the Air Force's designated agent, HQ PACAF/CV will

sign a document that addresses the issues of wetlands and floodplains that may be associated with actions the Air Force proposes to take. This document, known as a FONPA, will state which alternative, the proposed action, one of the two action alternatives, or the no action alternative, will be selected as the appropriate course of action. The FONPA will be combined with the FONSI into one document. It will contain documentation that there are no practicable measures to minimize harm to wetlands, and that all appropriate mitigation will be incorporated into the project design or otherwise authorized.

1.5 NEPA Actions That Influence This Assessment

1.5.1 Alaska Army Lands Withdrawal Renewal-Final Legislative EIS, U.S. Army 1998

This EIS assesses the environmental consequences associated with the continued military use of U.S. Army lands and the renewed withdraw of those lands including the Fort Wainwright Yukon Maneuver Area.

1.5.2 Fort Wainwright Resource Management Plan and Final EIS, U.S.D.I., Bureau of Land Management, 1989 and Integrated Natural Resources Management Plan 1998-2002 U.S. Army Alaska Volume 3 Fort Wainwright. These documents provide summaries of alternate resource management plans for the Fort Wainwright Yukon Maneuver Area.

1.5.3 Integrated Natural Resources Management Plan, Eielson Air Force Base, 2003.

This document addresses natural resource management on Eielson Air Force Base and provides guidance for management activities and long-range planning on Eielson managed lands.

1.6 Project Scoping/Significant Issues

This section provides a summary of all the issues raised during the scoping process. The scoping process identifies relevant issues and establishes the limits of the environmental analysis. A scoping meeting was held on July 2, 2003 to discuss the proposed action and the alternatives. This meeting involved Air Force and agency personnel. Section 5 of this document lists the individuals that participated in the scoping process. The topics listed below were issues identified as relevant to the analysis process and will be addressed in detail in this document in Sections 2, 3, and 4.

1.6.1 Hazardous Material Releases: Concerns about the present systems potential for a hazardous materials release. Current operations include precautions taken to prevent a release of hazardous materials (fuel, oil, and antifreeze) associated with operation of generators. These precautions include spill pallets under generators, use of a double walled fuel tank, and interstitial and product monitoring on the fuel tank. Even with these precautions, a malfunction in a generator or mishandling of fuel has caused hazardous material releases in the past. Three hazardous material releases of reportable quantity have been recorded in the past two years.

1.6.2 Air Quality: The generators must run continuously causing a release of diesel exhaust to the surrounding atmosphere. This emission source is reportable by the Air Force under Eielson's Title V Air Emissions permit.

1.6.3 *Wildlife*: Due to the presence of wildlife in the project area, direct and indirect impacts to individual species must be considered. Potential impacts include alteration or loss of habitat and unintentional taking of wildlife. Actions such as the construction of power lines or installation of a wind generator have the potential to result in unintentional taking due to bird strikes on towers.

1.6.4 *Mission Integrity*: USAF staff expressed concerns about the reliability of the existing system in providing power to a crucial communication site. The mission integrity would be jeopardized by the loss of training and tracking data in the event of a power failure.

1.6.5 *Economic Considerations*: As with any public entity, the Air Force must take into consideration the cost effectiveness of the various options. For this reason, economics of the alternatives will be considered as a part of the overall decision.

1.7 Federal and State Permits or Licenses Needed to Implement the Project

1.7.1 A Clean Water Act Section 404 permit is needed to implement the proposed action as there will be impacts to protected wetlands by placement of fill associated with 58 of the 427 utility poles required for construction of the power and fiber optic line. Eielson AFB will construct the power line under the authority granted by *Nationwide Permit 12, Utility Line Activities*.

1.7.2 The Proposed Action and Alternative 1 would result in placement of structures on United States Army Alaska (USARAK) lands. The USAF would be responsible for procuring the necessary land use permit from the Army

1.7.3 A Section 106 clearance from the State Historic Preservation Office will be required for this project.

2.0 Description of the Proposed Action and Alternatives

Section 2.0 provides a description of alternatives considered to achieve the purpose and need described in Section 1.0. The proposed action, alternatives 1 and 2, and the no action alternative are addressed.

2.1 Proposed Action – Construct Overhead Transmission Line from CHPP to Camera 2

2.1.1 This proposed action would result in the construction of a power distribution system that would extend from the coal fired CHPP to Quarry Road, follow Quarry Road to Pole Hill, and then continue on from Pole Hill along Skyline Road to Camera Site 2. The system would provide 7,200 volt, three-phase power to Quarry Hill where a substation would be built. From the Quarry Hill substation a 14,400-volt system would be provided for distribution to the installed grid.

2.1.2 The power cables will be hung on standard treated wood poles with cross members. The poles will be placed with spacing between 250 feet and 300 feet, depending on the terrain. The poles will be installed by auguring a 24-inch-wide hole to the appropriate depth (approximately 7-feet). The pole will be set with gravel material used as backfill (see **Figure 3**).

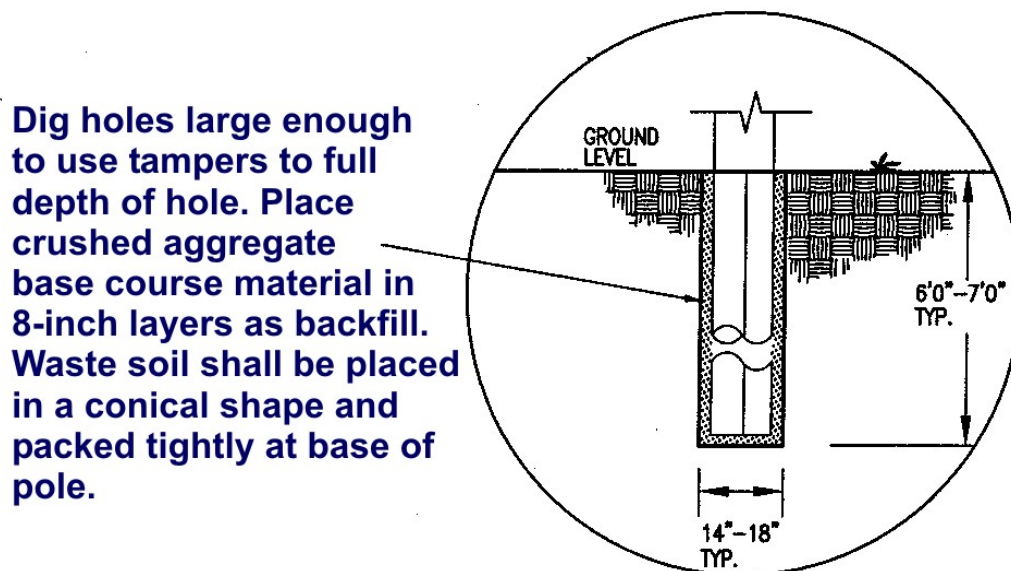


Figure 3 – Typical Power Pole Excavation Detail

2.1.3 In addition to the power cables, the distribution poles will carry a 48 fiber, single-mode fiber optic cable to allow for current and future expansion of the communications capabilities to these remote sites.

2.1.4 Most of the power poles will be set right at the toe of the existing roadbed with a right-of-way configuration similar to that depicted in **Figure 4**. In areas where it deviates from this, and the areas have not been previously cleared of trees, a hydro-axe will be used to clear the right-of-way.

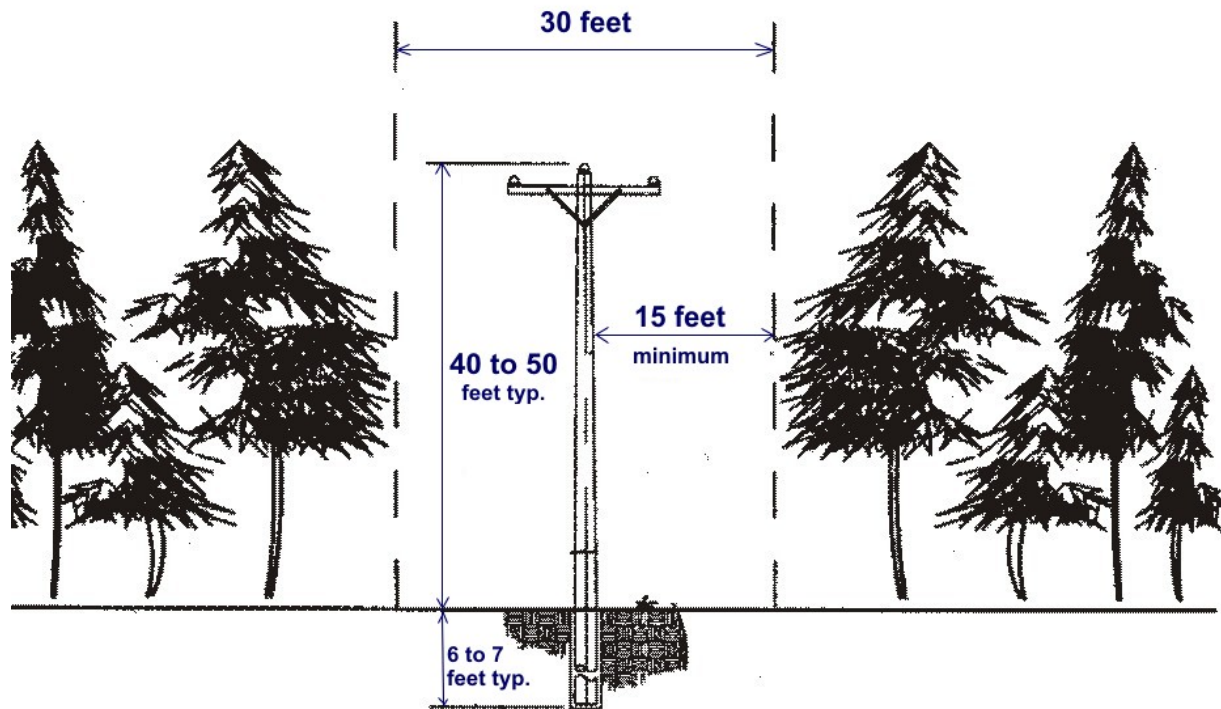


Figure 4 – Typical Pole Placement and Right-of-way Configuration

2.1.5 In wetland areas, access for power pole hole excavation will be mainly from the existing road bed. In areas where the elevation or slope prevents the auguring equipment from setting up on the main road, a track mounted drill rig will be used. A temporary equipment pad will be constructed by placing steel mats or wood timbers. At the conclusion of the pole installation activities, the temporary mat will be removed. Approximately 58 of the 427 poles will be placed in wetlands. Total acreage of wetlands that will be filled for construction of the line is approximately 0.05 acres.

2.2 Alternative 1 - Construct an Overhead Transmission Line from CHPP to Pole Hill

2.2.1 Under this alternative, Eielson AFB would construct an overhead electrical transmission line from the CHPP to Pole Hill. This alternative would result in approximately 14 miles of power lines. Although it would only be half the length of the proposed project, it would provide power to the critical Pole Hill location. However, Camera Site 2 will continue to operate using constant run diesel generators.

2.2.2 Construction design and methods of installation for this alternative would be similar to those described for the proposed project.

2.3 Alternative 2 – Installation of a Wind Energy System with Diesel Powered Backup Generator

2.3.1 Under this alternative, a 50 kW wind turbine generator would be installed at Pole Hill and Camera Site 2, with a diesel powered backup generator at each site.

2.3.2 A 50 kW wind turbine would provide the primary electrical load. During periods of high wind, the wind turbine would create more power than is being consumed at both sites. This excess energy would be stored in a battery bank for use during periods of low wind. If the battery voltage falls below a pre-set limit the back-up diesel generator would automatically start and operate until the batteries reach full charge.

2.3.3 The wind turbine would be an up-wind, horizontal-axis, three-blade turbine (**Photo 1**). The blades would have an approximate 46-foot rotor diameter and be rated at 50 kW at a wind speed of 25 miles per hour (11 meters per second). The wind turbine would produce a direct current (DC) that would be converted into alternating current (AC) by use of a DC-AC inverter. The wind turbine would be capable of providing 240 volt, three-phase power.



Photo 1 – Typical 50 kW Wind Turbine

2.3.4 The wind turbine would be mounted on a 170-foot guyed lattice tower. The tower would be placed on a 10-foot by 10-foot concrete sub-base and be supported by guy wires. A 50-foot diameter area would be cleared of vegetation for installation of the guy wires and tower. The tower and wind turbine would be erected utilizing a crane (Photo 2).



Photo 2

Installation of a Similar 50 kW Wind Turbine and Tower in Kotzebue, Alaska

2.3.5 The wind tower and turbine would be located within 0.25 mile of the Pole Hill communication relay site. The results of a siting analysis would determine the exact placement of the wind generator. Factors taken into consideration would be the roughness of terrain, local wind velocity and density measurements, presence and height of surrounding vegetation, migration routes, and line of sight measurements for microwave transmissions.

2.3.6 A 10-foot by 40-foot steel conex type container would be required to house the protective fuses, controls, monitoring equipment, and storage batteries for the energy system. This would be located next to the Pole Hill communications equipment building.

2.3.7 The storage battery bank would consist of a string of 80, 12-volt, 1,500-amp hour, deep cycle batteries. The gel-celled lead-acid battery bank would be capable of supplying an 8-hour electrical energy reserve.

2.3.8 The diesel generator would be a 40 kW diesel generator with automatic controls that would allow the unit to start during low battery voltage conditions. The diesel unit would power the communications site and automatically turn off when battery bank is fully charged.

2.4 No Action Alternative

2.4.1 No changes would be made under this alternative. The Pole Hill communication and relay site would continue to be operated by diesel generators. Current maintenance and refueling activities would continue and a scheduled repair/replacement program would be implemented.

2.5 Other Alternatives Considered But Not Included in the Analysis

2.5.1 As previously stated in Section 1.1.5 of this document, an essential criteria for selecting alternatives is that the system built must be reliable and easily maintained due to the remote location of the facilities and the extreme weather that can occur in the range. As part of the alternatives analysis, two other alternatives were suggested, but not carried forward.

2.5.2 One alternative was the construction of an overhead electrical transmission line from Quarry Hill following the most direct route to Pole Hill was considered but eliminated from further consideration. This 6-mile electrical transmission line route would traverse steep terrain, wetlands, and cross several streams. Construction and maintenance of this line was deemed impractical given the other viable alternatives and the limited access to the line, once constructed, to perform maintenance activities.

2.5.3 The second alternative considered was the construction of an overhead electrical transmission line from an existing Golden Valley Electric Association (local commercial power company) three-phase power source along Johnson Road was also considered. Johnson Road is located to the south of Pole Hill and is also an upland route. This route would require the construction of approximately 16 miles of electrical transmission line and was therefore eliminated from consideration for economic reasons.

3.0 Affected Environment

Section 3 describes the existing environment and resource components that would be impacted by the proposed project and the alternatives. The resources discussed in this section are presented as a baseline for comparisons of environmental consequences.

Resources discussed in the section are as follows:

- Physical Resources, which includes general site location and topography, geology and soils, climate and air quality, ground and surface water, wetlands, and infrastructure improvements.
- Biological Resources, which includes vegetation, wildlife, fish, threatened or endangered species.
- Cultural Resources including Archeological or Historical Resources.
- Recreational Resources.
- Socioeconomic Factors.

3.1 Physical Resources

The proposed project is located approximately 135 miles south of the Arctic Circle and 70 miles north of the Alaska Range in interior Alaska. A topographic map of the project area is provided in **Figure 5**, page 16. The proposed power and communication project would be located within the YTA on Fort Wainwright approximately 30 miles east/southeast of Fairbanks, Alaska (Figure 1). The YTA contains approximately 260,000 acres and is located within the Fairbanks North Star Borough. The proposed electrical transmission line would be constructed starting at the CHPP on Eielson AFB, and terminate at Camera Site 2, approximately 27 miles away. The topography of the proposed project area encompasses two distinct physiographic areas. The first three miles of the line would be in the abandoned floodplain of the Tanana River, with elevations ranging from 525 to 550 feet above Mean Sea Level (MSL). The surface of the floodplain is relatively smooth and slopes gently downward to the northwest at a gradient of about 6 feet per mile. The remaining 23 miles lies within the Yukon –Tanana Upland of the Northern Plateau physiographic province. The Yukon –Tanana Upland is characterized by a series of rounded, rolling hills, rising 700 to 3,000 feet above mean sea level. The elevation ranges from 1,125 feet above mean sea level at Quarry Hill to 2,483 feet at Pole Hill, and 2380 feet at Camera Site 2. Gentle side slopes and broad undulating divides typify the area. The valley floor is classified as alluvium basins with valleys in the area ranging from broad to steep/narrow valleys. Several small streams flow through the valley floor in the vicinity including French Creek, which drains the project area to the south and Moose Creek to the north. Most streams originating in the YTA flow south and west to the Tanana River, which is a tributary of the Yukon River.

3.1.1 Geology, Soils, and Permafrost

3.1.1.1 The geology of the area is classified as Precambrian and Paleozoic-age metamorphic rocks of the Yukon-Tanana crystalline complex, formally known as the

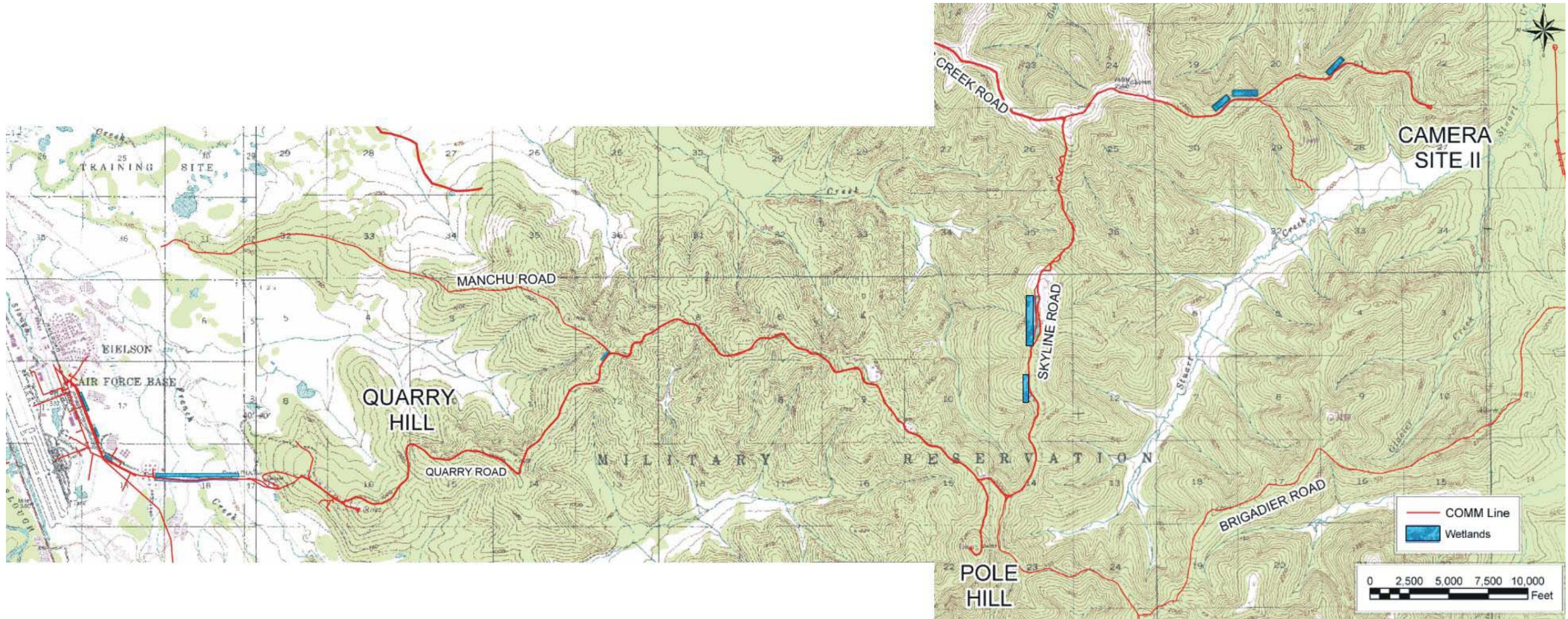


Figure 5 – Topographic Map of Project Area Showing Wetlands Locations

Birch Creek Shist. The rocks have been intruded by igneous rocks of Mesozoic and Cenozoic age referred to as the Eielson plutons. Younger sedimentary Pleistocene and Holocene loess deposits have overlain the igneous and metamorphic rocks. These deposits originated from the floodplain of the Tanana River and the foothills of the Alaska Range. The loess varies in depth from a few inches on the ridge tops to 40 to 100 feet in the valleys.

3.1.1.2 Soils in the upland areas consists of well-drained silty soils, chiefly loess over bedrock, that varies in depth. Upland soils found on south-facing slopes are generally better drained than those found on north-facing slopes. Soils on north facing slopes usually are underlain by discontinuous permafrost. Soils in the alluvial plains of the streams consist of poorly drained silts and loams typically overlying stratified sands, silts, and gravel. Depressions in the alluvial plains are often interbedded with thick peat layers and usually underlain by continuous permafrost.

3.1.2 Climate and Air Quality

3.1.2.1 Eielson AFB and the YTA has the northern continental climate of Interior Alaska, which is characterized by short, moderate summers, long cold winters, and low precipitation and humidity. The mean annual precipitation in the area is 11.2 inches, much of which comes as snow. The coldest month is January, with an average temperature of minus 10.3°F and an average minimum temperature of minus 19.2°F; the warmest month is July, with an average temperature of 61.7°F and an average maximum of 71.9°F. The minimum amount of daylight is shortest in December with 3 hours 47 minutes of available daylight.

3.1.2.2 May and June have the highest winds, with average wind speeds of 7.7 and 7.2 miles per hour, respectively. During most of the year, the prevailing wind direction is from the north at an average of 5.15 miles per hour. However, in June and July, the wind direction is typically from the southwest. Wind speed can vary with elevation and roughness of surrounding terrain. Meteorological data for Pole Hill including average wind speed and wind density is not available. According to a U.S. wind energy resource map produced by the Department of Energy (DOE), the area is classified as having a wind power class of 2-3. According to DOE wind power classification, a wind power class 1 is rated as having the lowest potential wind energy and 7 the highest for potential wind energy.

3.1.2.3 Air quality is generally good at Eielson AFB and in the adjoining YTA lands. Although portions of the Fairbanks North Star Borough, of which Eielson AFB is also a part, are in non-attainment for carbon monoxide (Fairbanks and North Pole), Eielson AFB is far enough south to not be included or affected. The Clean Air Act designates areas as attainment, non-attainment, maintenance, or unclassified with respect to their compliance with National Ambient Air Quality Standards (NAAQS). Non-attainment and maintenance areas are locales that have recently violated one or more of the NAAQS and must satisfy the requirements of State or Federal Implementation Plans (SIPs or FIPs) to bring them back into conformity with the applicable air quality standards. Eielson AFB is located in an *unclassified* area, and therefore activities that generate emissions do not need to satisfy the requirements of the EPA ruling *Determining Conformity of General Federal Actions to the State or Federal Implementation Plans*.

3.1.3 Ground and Surface Water

3.1.3.1 Groundwater is typically found in small quantities in upland areas in fractures and joints of underlying bedrock. The lack of groundwater in large quantities is attributed to high topographic relief and the well-drained soils found in the area. Groundwater is available in moderate to large quantities from the gravel deposits found in the alluvial plains of stream valleys. The major source of recharge for aquifers is precipitation that enters the ground through infiltration.

3.1.3.2 Most small streams in the area are low-gradient feeder streams that characteristically exhibit low discharges during the winter months and peak discharges during the summer months. The entire Yukon-Tanana Upland area lies within the Yukon River catchment basin. There are no lakes or ponds present in the project area.

3.1.4 Wetlands

3.1.4.1 Even though wetlands are a predominating physical feature found within Eielson AFB and the YTA, most of the project area is not located in wetlands (see **Figure 5**). The exceptions to this are in the first three miles along Quarry Road where it is located in the abandoned Tanana River floodplain in association with the French Creek drainage. These areas are mainly black spruce stands that are interspersed with small amounts of paper birch and tamarack, as well as, open areas dominated by scrub/shrub stands of dwarf arctic birch and bog rosemary. Understory in most areas includes Labrador tea, lowbush cranberry, and blueberry. Occasionally the black spruce wetlands are interspersed with wet meadows that support emergent aquatic vegetation (sedges, grasses) in conjunction with seasonally persistent shallow open water areas.

3.1.4.2 Wetlands in the more elevated rolling hills portion of the project area are generally isolated pockets of black spruce or scrub/shrub wetlands created by perched water tables resulting from discontinuous permafrost.

3.2 Biological Resources

3.2.1 Vegetation

3.2.1.1 Due to the variations in the surrounding terrain, the plant communities vary due to slope orientation, changes in elevation, and fire history. Changes in vegetation are also influenced by spatial differences in soil temperature, moisture content, soil fertility, and presence of permafrost. The major plant community types include white and black spruce coniferous forests; paper birch and poplar broadleaf forests; mixed coniferous-broadleaf forests; tall scrub-shrub; and herbaceous wetlands. The two most common types are upland mixed spruce/broadleaf forest and black spruce lowland forest.

3.2.1.2 Upland mixed spruce/broadleaf forest tends to occur on well drained sites with little permafrost. This forest type is commonly found on south-facing slopes. Tree species include white spruce, paper birch, quaking aspen, and balsam poplar. Willows, alder, wild rose, blueberry, and high-bush cranberry are common shrubs. Ridge tops with higher elevations

usually consist of a tall shrub community characterized by dwarf birch and herbaceous species with widely scattered black spruce. Mixed forests usually develop from stands of pure or nearly pure broadleaf trees such as birch. As the slower growing spruce reach the canopy, the relatively short-lived birch and other broadleaf species begin to mature and die. Mixed forests eventually develop into stands of pure spruce as the broadleaf trees, whose seedlings are relatively shade intolerant, continue to drop out without replacement. In some cases, the resultant spruce stand may be fairly open if spruce regeneration is insufficient to maintain a closed overstory canopy. Moderate to heavy wildfire will return this forest type to a relatively pure stand of young broadleaf trees. Birch trees are capable of extensive sprouting, or *suckering*, from the root collar following fire.

3.2.1.3 Black spruce lowland forest tends to occur on poorly drained sites underlain by permafrost. Black spruce forest is common in low-lying areas, drainage basins, and north-facing slopes. Black spruce occurs in closed canopy stands and as scrubby open stands of dwarf trees. Other species commonly occurring in this forest type include tamarack, blueberry, low-bush cranberry, Labrador tea, and feather moss. Closed canopy black spruce forest tends to return to its original composition after fire (Viereck et al., 1992). In the absence of fire, closed canopy black spruce may transition into scrubby open stands of black spruce as the moss layer thickens. A thicker mat of moss tends to better insulate soils, causing the permafrost level to rise and the soil to be colder and wetter over time.

3.2.1.4 The entire western portion of the YTA receives full wildfire protection as determined by the Interagency Fire Management Plan. Under full wildfire protection, fires receive aggressive initial attack dependent upon the availability of suppression resources. The objectives are to control all fires at the smallest acreage reasonably possible initially and to minimize disruption of planned or ongoing human activities in the area.

3.2.2 Wildlife

3.2.2.1 Wildlife species in the surrounding areas are typical of those found in Interior Alaska. Large mammals that are likely to be found in nearby habitat include moose, red fox, black bear, snowshoe hare, red squirrel, lynx, marten, wolverine and coyote. Gray wolves are transient to the area.

3.2.2.2 Migratory waterfowl are scarce in the area due to a lack of open water. However, other migratory birds common to interior Alaska including gulls, swallows, thrushes, sparrows, and warblers, can be found in the area. Non-migratory birds include ravens, jays, chickadees, songbirds, woodpeckers, grouse, and ptarmigan. Raptors include bald and golden eagles, hawks, kestrels, great horned owls, boreal owls, and hawk owls.

3.2.2.3 Recreational hunting of big and small game species in non-restricted areas is an important activity. Big game species include moose and black bear. Hunting of small game includes snowshoe hare, red squirrel, grouse, and ptarmigan.

3.2.3 Fish

French Creek and Moose Creek are shallow, gravel bottomed streams that run with clear water for most of the year. The creeks contain northern pike, arctic grayling, whitefish, chum salmon, burbot, and rainbow trout. Little information is available about fish and fish habitat in tributaries of French Creek and Moose Creek.

3.2.4 Threatened or Endangered Species

3.2.4.1 There are no known threatened or endangered species within the proposed project area. However, the proposed project site is within the range of the American peregrine falcon (*Falco peregrinus anatum*), which was removed from the list of threatened and endangered species in 1999. Peregrine falcon's nests have been located on the Salcha and Goodpasture River drainages to the southeast, and the Charley and Yukon River drainages to the northwest of the proposed project area. The American peregrine falcon is known to nest in the Salcha River Bluffs located approximately 15 miles to the south. Potential peregrine falcon habitat is not found within the nearby Stuart Creek Impact Area, and none have been observed nesting in this area. Another federally delisted subspecies, the Arctic peregrine falcon (*Falco peregrinus tundrius*), is not known to nest within several hundred miles of the area. The only occurrence of either subspecies in the proposed project area is transitory during migration periods.

3.2.4.2 Due to its recent recovery from endangered status, the U.S. Fish and Wildlife Service will monitor the American peregrine falcon on a regular basis for the next decade. If survey data indicate a reversal in recovery, the American peregrine falcon could be emergency listed at any time. Therefore, the Fish and Wildlife Service recommends agencies avoid impacts to peregrine falcons to assure a healthy long-term population.

3.2.4.3 No Federal or State listed threatened or endangered plant species have been listed as occurring within Eielson AFB or Fort Wainwright YTA.

3.3 Cultural Resources

3.3.1 Archeological and Historical Resources

3.3.1.1 As part of the development of a *Historic Preservation Plan (HPP)* for Army lands in the State of Alaska, the U.S. Army began an inventory of all archeological and historic sites contained on their lands in 1984. In addition, as part of the preliminary siting work for the range upgrade and expansion projects proposed in conjunction with the deployment of the Stryker Brigade at Ft. Wainwright, cultural resource surveys were completed for the entire power line right-of-way area, outside of the Stuart Creek Impact Area. Areas within the impact area are exempt from survey requirements. The results of this survey indicated no sites eligible for listing on the National Register of Historic Places were found.

3.3.1.2 In 1994, Eielson AFB developed a predictive model for identifying areas on base with a high probability of prehistoric significance. This model (Mason et al., 1994) was designed to provide baseline information for planning and land management on base. The model

incorporated a variety of information into predictions of locations and potential characteristics of historic properties. The predictive model was used as a basis for conducting an extensive field survey of high probability areas. The field survey, summarized in a report entitled *Archaeological Survey and Assessment of Prehistoric Cultural Resources on Eielson Air Force Base, Alaska Management Summary* (Gerlach and Bowers, 1996), was conducted within three high probability areas. However, no significant prehistoric archeological or historic sites were found in any of the three high probability areas.

3.3.1.3 A paleontological site, with the assigned number XBD-164 from the State Office of History and Archeology, is located near the base of Quarry Hill on Eielson AFB. Undated mammoth and bison fossils have been recovered from the area, which was originally a road cut excavated during the construction of the Trans-Alaska Pipeline. The site was determined ineligible for the National Register of Historic Places. Three other sites in the project corridor had been documented in previous surveys. As a result of surveys conducted by USARAK during the 2002 field season in the YTA, these sites were either not relocated or determined ineligible for listing on the Nation Register.

3.4 Recreational Resources

3.4.1 Although there is no data on the number of people who use Eielson AFB and YTA lands for outdoor recreation, it is clear that the most popular forms of recreation include hunting, trapping, off-road vehicle use, and snowmobile use (BLM, 1994). Residents of Eielson AFB are the primary users, presumably because of the proximity of their homes to these areas. The general public feels uneasy about driving into an area with warning signs, restrictions, and requirements for permits (BLM, 1994).

3.4.2 Hunters, fishermen, and trappers are required to attend a safety briefing and to obtain a permit prior to using military lands. Hunters in the YTA harvest an average of 53 moose per year with 2 moose per year harvested by hunters on Eielson AFB (bow hunting only).

3.5 Socioeconomic Factors

3.5.1 The area surrounding the proposed project is utilized primarily by the military as a transportation corridor to access military facilities located within the YTA. The area is not heavily used by the general public. The proposed electrical transmission line is not located near any population centers that are inhabited disproportionately by minorities or low-income groups.

4.0 Environmental Consequences

Section 4 is organized by resources, with the environmental consequences evaluated for each alternative. This discussion will provide a scientific and analytic basis for the comparisons of the alternatives and describes the probable consequences (impacts and effects) of each alternative on selected environmental resources. The effects of each alternative upon each resource are discussed in the same order that they were presented in Chapter 3, beginning with the Proposed Action. Impacts that are common to all alternatives are stated as such and are addressed in the appropriate sections.

4.1 Physical Resources

4.1.1 Geology, Soils, and Permafrost

4.1.1.1 Proposed Action

4.1.1.1.1 In those areas where the existing road corridor does not provide an open right-of-way, removal of vegetation for transmission line installation would be accomplished with a hydro-axe, but would not result in a disturbance to soils other than minor compaction. The primary disturbance to soils would result from the auguring of holes for the installation of 427 utility poles and guy wires. Approximately 427 cubic yards of soil (approximately one cubic yard per pole) would be disturbed and displaced with the installation of the utility poles. Installation for each utility pole would create a spoil amount of approximately one cubic yard of native soil. The excess soils would be spread out over a 6-foot diameter area around the pole and would naturally revegetate with native grasses and ground covers. Erosion impacts would be negligible.

4.1.1.1.2 Soil compaction could occur during construction due to off-road movement of pole drilling equipment. However, soil disturbance should be minimal since most of the project is located in uplands and the pole sites in wetlands will be accessed primarily from the existing roadbed.

4.1.1.2 Alternative 1

Impacts to soil under this alternative would be similar to those described for the proposed action, except that only the corridor between the CHPP and Pole Hill would be affected as this would be the termination point of the line under this proposal. Alternative 1 would extend power for approximately half the distance that is called for in the proposed action. This alternative also has the potential for soil contamination associated with fuel transfer spills and accidents at the Camera Site 2 location.

4.1.1.3 Alternative 2

4.1.1.3.1 Approximately 24 cubic yards of soils would be excavated as part of the construction of a two 10-foot by 10-foot x 3-foot deep concrete pads for each of the wind turbine towers (Pole

Hill and Camera 2). The soils removed would be evenly distributed around the base and would naturally revegetate with native grasses and ground cover. Erosion would be negligible.

4.1.1.3.2 Soil compaction could occur during construction due to heavy equipment use at the site. However, these disturbances should be minimal since the tower would be located in uplands.

4.1.1.4 No Action Alternative

There would be no additional disturbance to soils under this alternative. However, the potential for soil contamination is greater with this alternative due to risks associated with fuel transfer spills and accidents in operating the constant run diesel generator. Three hazardous material releases of reportable quantity have been recorded in the past two years associated with the operation of the generators. The USAF and USARAK will continue to respond to hazardous spills in cooperation with State and Federal agencies.

4.1.2 Climate and Air Quality

4.1.2.1 Proposed Action

4.1.2.1.1 The proposed power upgrade to YTA facilities would eliminate the constant use of diesel generators. The backup generators would only be required during power failures. The overall air quality in the vicinity of Pole Hill would improve due the reduction in emissions caused by the diesel generators.

4.1.2.1.2 Air quality may be temporarily diminished during construction due to emissions produced by construction equipment. Airborne particulate matter in the form of dust emissions may also increase if the construction occurs during dry summer months.

4.1.2.2 Alternative 1

This alternative would result in the elimination of a constant run generator system at Pole Hill, reducing current emission levels and resulting in some improvement in air quality overall. There would still be three generator systems operational to meet range equipment power demands at other locations in the YTA.

4.1.3.2 Alternative 2

4.1.2.2.1 Under this alternative, a 50 kW wind generator would be installed at both Pole Hill and Camera Site 2. A diesel powered backup generator with automatic start would be incorporated into the system to provide power during periods of low wind. Overall air quality in the vicinity of Pole Hill and Camera Site II would improve due to reduced run time of the diesel generators. The reduction in emissions at each site is dependent upon the amount and consistency of electric power produced by the wind turbines. Thus, air quality would fluctuate depending upon wind power availability.

4.1.2.2.2 Electricity produced by wind generation would emit no emissions to the environment. It is estimated that the 50 kW wind generator would displace approximately 100 tons of carbon dioxide produced annually from other electric sources such as a coal-burning power plant (Environmental Emissions from Energy Technology Systems: U.S. Dept. of Energy, 1989).

4.1.2.2.3 Air quality may be temporarily diminished during construction due to emissions produced by construction equipment. Airborne particulate matter in the form of dust emissions may also increase if the construction occurs during dry summer months.

4.1.2.3 No Action Alternative

There would be no changes to the existing air quality under the no action alternative. This alternative would produce more emissions at Pole Hill and Cameral Site 2 than the proposed action or alternatives 1 and 2 due to emissions produced by the constant run generators that would remain in place.

4.1.3 Ground and Surface Water

4.1.3.1 Proposed Action

The proposed action would likely result in reduced risk of impacts to both ground water and surface water. Over the years that the range facilities have been in operation, several fuel spills have occurred while operating and maintaining the generator systems. With only backup generators being kept, the frequency and amount of fuel that is handled will be significantly reduced.

4.1.3.2 Alternative 1

Implementation of this alternative would also reduce the risk from accidental fuel spills, but to a lesser degree, as there would still be a need for constant run generators at Camera Site 2.

4.1.3.3 Alternative 2

This alternative would also result in reduced risk of oil spills, as fuel needs would be greatly reduced with the use of wind generation as the primary power source at both Pole Hill and Camera 2.

4.1.3.4 No Action Alternative

Under this alternative the continued operation of the constant run generators would likely result in continued minor spills in association with these operations, likely having impacts on surface water resources.

4.1.4. Wetlands

4.1.4.1 Proposed Action

The proposed action would result in some minor disturbance to wetlands. Approximately 58, 24-inch-wide holes would be dug in wetland areas for placement of the power poles. The holes would be backfilled with gravel material and the excavated soil would be mounded around the base of the pole. These mounds would naturally revegetate through a natural invasion process. This project would ultimately result in less than 0.05 acres of wetlands being disturbed. Most of these wetlands are scrub/shrub or black spruce wetlands of relatively low habitat value. Also, at any given site there would be virtually no disturbance of wetland function as the surface area that would be impacted at each pole would be only 4 to 6 square feet.

4.1.4.2 Alternative 1

Impacts to wetlands would be of a similar nature to those described for the proposed project, however the quantity of wetlands excavated and backfilled would be approximately half of that required for the proposed action.

4.1.4.3 Alternative 2 and the No Action Alternative

No impacts to wetlands would occur with these alternatives.

4.2 Biological Resources

4.2.1 Vegetation

4.2.1.1 Proposed Action

4.2.1.1.1 Under the proposed action existing vegetation would be impacted as part of the clearing of the transmission line right-of-way. The extent to which this would occur is difficult to quantify, as a large portion of the right-of-way is already cleared previously as part of the construction of the road corridor. The height and distance of trees from the centerline of the power line right-of-way will determine which trees will need to be removed (see **Figure 5**). The actual amount of vegetation that would be cleared along this route would likely be minimal due to the previously cleared areas adjacent to Quarry Road. Due to the abundance of similar vegetation types along the proposed project route, the loss of vegetation would likely not have a significant impact on availability of forested habitat in the area.

4.2.1.2 Alternative 1

Alternative 1 would provide power and communications connections to Pole Hill only. The areas through which the line would traverse are much more wooded than from Pole Hill to Camera Site 2, which exhibits predominantly more scrub/shrub alpine tundra vegetative communities. Thus it is likely this alternative would result in nearly as much tree removal as the proposed action. However, given the abundance of similar vegetation type in the area, the loss of vegetation would not be considered significant.

4.2.1.3 Alternative 2 and the No Action Alternative

These alternatives would not result in any additional loss of vegetation.

4.2.2 Wildlife

4.2.2.1 Proposed Action and Alternative 1

4.2.2.1.1 Loss of forested habitat due to tree removal in the power line corridor would likely have an overall benefit to wildlife such as moose and black bear. The cutting of large mature aspen, balsam poplar, and birch trees causes an increase in root suckers. Creating a clearing for the transmission line may benefit other species such as snowshoe hare, red fox, lynx, and raptors by providing edge habitat. Young saplings and suckers are an important food source for moose and invading grasses and shrubs are a source of food and cover for voles and mice. Removal of standing dead trees however, could decrease nesting habitat for cavity nesting birds, and feeding habitat for birds that utilize insects. No direct impacts to wildlife are anticipated with the proposed construction of the transmission line other than the possibility of minor disruptions to wildlife movement as typically found during the construction phase of projects.

4.2.2.1.2 Electrical lines and utility poles have the potential to result in avian fatalities due to electrocution and bird strikes with utility poles. Most bird electrocutions occur on low voltage distribution systems where the spacing of the electrical conductors are less than 7 feet. The closer spacing is a hazard to raptors and other large birds because their body size and wingspan are big enough to span the distance between the conductor wires, completing an electrical circuit. Another major source of bird electrocution results from pole mounted transformers. A bird landing on top of a transformer can easily contact an energized jumper wire while its feet are on the grounded transformer. Mitigation methods could be incorporated into the design to include adequate spacing between phase conductors and insulating caps on the conductors. For pole mounted transformers, mitigation would include insulating the jumper wires with tubing, covering bushings and lightning arresters with insulating caps, and painting transformers with non-conductive paint. Violations of the Migratory Bird Treaty Act or the Endangered Species Act, or both, could result if fatalities occurred to protected bird species.

4.2.2.2 Alternative 2

4.2.2.2.1 Possible impact to birds could occur with Alternative 2. Effects on bird populations could result from deaths caused by wind turbines. Violations of the Migratory Bird Treaty Act or the Endangered Species Act, or both, could result if fatalities occurred to protected species. The National Renewable Energy Laboratory (NREL), a DOE organization, is working with environmental groups, government agencies, and other interested parties to address this issue.

4.2.2.2.2 Studies have found that higher levels of mortality have occurred in coastal locations where large concentrations of waterfowl are found or where wind turbines are located in highly used migration corridors. U.S. Fish and Wildlife Service (USFWS) has also presented evidence that higher mortality rates occur with towers greater than 200 feet above ground and towers that

are illuminated with navigational warning lights. The tower used in alternative 2 would be under 200 feet and would not have navigational warning lights.

4.2.2.2.3 The USFWS in co-operation with various support agencies have established recommendations to mitigate avian mortality. Recommendations pertinent to this alternative are as follows:

- Users should employ and assess radar and acoustic and ground survey techniques that could then be used to determine major migratory corridors or routes (not necessarily flyway-oriented) to avoid siting towers in these areas.
- Avoid siting towers in or near wetlands, near other known bird concentration areas (e.g., National Wildlife Refuges), or in habitat of threatened or endangered species known to be impacted by towers.
- Guyed towers constructed in known raptor or waterfowl concentration areas should use daytime visual markers (e.g., bird diverter devices) on the guy wires to prevent collisions by these diurnally active species.
- The operator should develop an effective dead-bird monitoring protocol.

4.2.2.2.4 No other impacts to the localized wildlife habitat are anticipated other than the possibility of minor disruptions to wildlife movement as typically found during the construction phase of projects.

4.2.2.3 No Action Alternative

4.2.2.3.1 Implementation of this alternative would not result in any loss of wildlife habitat. No changes in wildlife habitat or movement would be expected under this alternative.

4.2.3 Fish

4.2.3.1 Impacts Common to all Alternatives

The implementation of the proposed action, alternatives 1 and 2, or the no action alternative would have no impact on fish habitat. The proposed route for the transmission line is along ridge tops. No streams would be crossed.

4.2.4 Threatened or Endangered Species

No known threatened or endangered species inhabit the area and would, therefore, not be impacted by the selection of any alternatives being considered.

4.3 Cultural and Historic Resources

There would likely be no impact to cultural or historical resources from implementation of any of the alternatives. In the event any signs of cultural or historic resources were encountered during construction, all activities would cease until a professional archeologist evaluated the

finding. Alaska State Historic Preservation Office and appropriate base authorities would also be contacted.

4.4 Recreational Resources

Implementation of the proposed action, alternatives 1 and 2, or the no action alternative would likely have no effect on recreational resources. As stated in Section 4.2.2, the project is likely to result in some improved wildlife (browse) habitat and could enhance the opportunity for recreational hunters in the area.

4.5 Socioeconomic Factors

The project area is unpopulated with the nearest residential area located 14 miles away. Additionally, the socioeconomic impacts that might occur as a result of construction of the proposed power upgrade to Pole Hill is inconsequential relative to the economic benefit impact in terms of Eielson AFB and Fort Wainwright operations.

4.6 Environmental Justice

4.6.1 Environmental justice, as it pertains to the NEPA process, requires federal agencies to identify and address, as appropriate, disproportionately high and adverse human health or environmental effects of their programs, policies, and activities on minority and low-income populations. To accomplish these requirements the Air Force must conduct an environmental justice analysis of all potential impacts that may result from the proposed actions.

4.6.2 The site of the proposed project is located on federal lands designated for military operations. The closest residential area to this site other than Eielson AFB housing is the community of Moose Creek located approximately 14 miles to the northwest. This residential area does not exhibit characteristics of low-income or minority populations that are not exhibited in the Fairbanks area population as a whole. Similarly, no native claims or allotments are located within a ten-mile radius of the project area. Based on the environmental impacts identified in this EA and on a corresponding environmental justice analysis, it is felt that no disproportionate impact to minority or low-income populations would occur from implementation of this project.

4.7 Cumulative Impacts

4.7.1 Cumulative impact is the impact on the environment that results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions. Individual actions may result in minor impacts but collectively may result in significant actions taking place over a period of time.

4.7.2 Cumulative impacts associated with the construction and expansion of facilities have been addressed in several previous environmental documents. These documents include *Alaska Military Operations Areas-EIS* (U.S. Air Force 1995), *Alaska Army Lands Withdrawal Renewal-Final Legislative EIS*, U.S. Army 1998, *Fort Wainwright Resource Management Plan and Final EIS*, U.S.D.I., Bureau of Land Management, 1989 and *Integrated Natural Resources*

Management Plan 1998-2002 U.S. Army Alaska Volume 3, Final EA/FONSI, Range Upgrade and Expansion Projects, Fort Wainwright, Alaska, 9 May 2003 and Integrated Natural Resources Management Plan, Eielson Air Force Base, July 2003.

4.7.3 The Bureau of Land Management has been designated by Congress to be co-land managers with the U.S. Army for lands withdrawn under the Military Lands Withdraw Act of 1986, which includes the YTA. They have the responsibility of monitoring and documenting land use effects on these lands and to develop Resource Management Plans (RMP). The 1989 RMP for Fort Wainwright and the 1998 RMP for Eielson AFB provide comprehensive discussions of cumulative impacts. These discussions arrive at the conclusion that significant cumulative impacts from military activities have not occurred.

4.7.4 The Proposed Action would permanently alter approximately 0.05 acres of wetlands. In addition, some clearing of trees and shrubs to create the power line corridor would occur. Previous road construction and maintenance activities by the USARAK and Eielson AFB has resulted in several hundred acres of impacts to various types of habitats. However, when considered on a regional basis, Air Force activities in the Yukon Training Area have resulted in highly localized and cumulatively insignificant impacts. Relative to the total acreage that comprises the Yukon Maneuver Area (248,000 acres), the total number of acres that have been impacted by the Air Force for range related activities is estimated to be approximately 325 acres. Most of this acreage will, once Air Force activities are discontinued, revert back to relatively natural conditions. This will be achieved through a combination of active rehabilitation and natural revegetation of a given facility/site.

4.8 Unavoidable Adverse Impacts

The unavoidable impacts that might result from implementation of the proposed action and alternative 1 would be the loss of 0.05 acres of wetland habitat and a limited amount of clearing of vegetation along the power line corridor.

4.9 Relationship of Short-Term Uses and Long-Term Productivity

4.9.1 Proposed Action

The short-term uses and benefits with this alternative is that the Air Force would receive a reliable, economical, and maintainable power supply. Annual operating cost to operate the facilities served by the power and communication grid would decrease. Localized air quality in the vicinity of Pole Hill and Camera Site 2 would increase. If the transmission line were no longer needed, the line could be removed and the area would eventually be restored to long-term productivity.

4.9.2 Alternative 1

Similar short-term benefits would accrue from this alternative as described for the proposed action. The benefits would be reduced since the transmission line would service less of an area. Long term productivity could be reestablished in the same manner as the proposed action.

4.9.3 Alternative 2

The Air Force would upgrade the power source to Pole Hill with a more economical system. Depending on the availability of wind resources, the burning of fossil fuels could be greatly reduced, which would result in a reduction of emissions. If the wind turbine was no longer deemed necessary, the components could be removed and the area could be restored and allowed to naturally revegetate.

4.9.3 No Action Alternative

The range would continue with its current power source and communication systems. There would be no loss of vegetation and no disruption to long-term productivity of resources.

4.10 Irreversible and Irretrievable Commitments of Resources

Irreversible commitments are those that cannot be reversed, except perhaps in the extreme long term. Irretrievable commitments are those that are lost for a period of time.

There are no irreversible commitments associated with the proposed action, alternative 1 and 2, or the no action alternative. No irretrievable commitments of resources would occur.

4.11 Mitigation

Certain design considerations for the proposed transmission line construction or construction of the alternative energy (wind generator) system would incorporate management practices that are designed to mitigate impacts to the environment. In addition, at the request of the US Fish and Wildlife Service, no clearing of trees and shrubs would occur prior to July 15 to avoid disturbance to migratory bird nests. Other than these measures, no specific mitigation is proposed or required.

6.0 List of Preparers

6.1 Writer

Sarah C. Conn, Alaska-Caledonia Environmental Services.

B.Sc. (Hons) in Environmental Biology, University of St. Andrews, Scotland.

M.Sc. in Aquatic Resource Management, King's College, University of London,

PhD in Geography, University of Birmingham, England.

6.2 Technical Advisors and Scoping Participants

Person	Agency	Information
Brent Koenen	USAF, 354 CES Natural Resources Eielson AFB ph: 377-5182	Natural Resource
James Nolke	USAF, 354 CES Environmental Planning Eielson AFB ph: 377-3365	Environmental
Tom Slater	USAF, 354 CES Natural Resources Eielson AFB ph: 377-5182	Natural Resource
Jenny Smith	USAF 354 Combat Training Squadron Eielson AFB ph: 377-3023	Operations
Bill Havard	CH&PP Eielson AFB ph: 377-3088	Operations
Mike Bergey	Bergey WindPower Co. Norman OK ph: 405-364-4212	Product Information / Cost Estimates
Sheila Newman	Corps of Engineers, Regulatory Functions Branch Fairbanks, AK ph: 474-2166	Wetland Permits and Agency Coordination
Larry Bright	US Fish and Wildlife Service Ecological Services Fairbanks, AK Ph: 456-0324	Project Review and wetlands permit review
Kevin Gardner	USARAC, DPW, Ft. Richardson, AK, ph: 384-3331	Project review and EA document review.

7.0 Bibliography and Glossary

7.1 Bibliography

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7.2 Glossary

Erosion – The wearing away of soil or organic matter by flowing water or wind.

Footprint – The maximum area required for the firing of weapons or detonation of munitions.

Loess – Unstratified deposits of silt and loam that are primarily deposited by the wind.

Mitigate – To reduce or negate the effects of an environmental disturbance.

Permafrost – Permanently frozen subsoil.

Physiographic – A region containing the same general natural characteristics.

Recharge – Surface water which percolates through porous soils to become part of the ground water.

Upland – The higher parts of a region or tract of land.

Wetlands – Areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support vegetation typically adapted for life in saturated soils conditions.

8.0 Wetlands Permit



U S Army Corps of
Engineers
Sacramento District

Nationwide Permit Summary

33 CFR Part 330; Issuance of Nationwide
Permits - January 16, 2002, including
Correction - February 13, 2002

12. Utility Line Activities. Activities required for the construction, maintenance and repair of utility lines and associated facilities in waters of the US as follows:

(i) **Utility lines:** The construction, maintenance, or repair of utility lines, including outfall and intake structures and the associated excavation, backfill, or bedding for the utility lines, in all waters of the US, provided there is no change in preconstruction contours. A "utility line" is defined as any pipe or pipeline for the transportation of any gaseous, liquid, liquefied, or slurry substance, for any purpose, and any cable, line, or wire for the transmission for any purpose of electrical energy, telephone, and telegraph messages, and radio and television communication (see Note 1, below). Material resulting from trench excavation may be temporarily sidecast (up to three months) into waters of the US, provided that the material is not placed in such a manner that it is dispersed by currents or other forces. The District Engineer may extend the period of temporary side casting not to exceed a total of 180 days, where appropriate. In wetlands, the top 6" to 12" of the trench should normally be backfilled with topsoil from the trench. Furthermore, the trench cannot be constructed in such a manner as to drain waters of the US (e.g., backfilling with extensive gravel layers, creating a french drain effect). For example, utility line trenches can be backfilled with clay blocks to ensure that the trench does not drain the waters of the US through which the utility line is installed. Any exposed slopes and stream banks must be stabilized immediately upon completion of the utility line crossing of each waterbody.

(ii) **Utility line substations:** The construction, maintenance, or expansion of a substation facility associated with a power line or utility line in non-tidal waters of the US, excluding non-tidal wetlands adjacent to tidal waters, provided the activity does not result in the loss of greater than 1/4-acre of non-tidal waters of the US.

(iii) **Foundations for overhead utility line towers, poles, and anchors:** The construction or maintenance of foundations for overhead utility line towers, poles, and anchors in all waters of the US, provided the foundations are the minimum size necessary and separate footings for each tower leg (rather than a larger single pad) are used where feasible.

(iv) **Access roads:** The construction of access roads for the construction and maintenance of utility lines, including overhead power lines and utility line substations, in non-tidal waters of the US, excluding non-tidal wetlands adjacent to tidal waters, provided the discharges do not cause the loss of greater than 1/4-acre of non-tidal waters of the US. Access roads shall be the minimum width necessary (see Note 2, below). Access roads must be constructed so that the length of the road minimizes the adverse effects on waters of the US and as near as possible to preconstruction contours and elevations (e.g., at grade corduroy roads or geotextile/gravel roads). Access roads constructed above preconstruction contours and elevations in waters of the US must be properly bridged or culverted to maintain surface flows.

The term "utility line" does not include activities which drain a water of the US, such as drainage tile, or french drains; however, it does apply to pipes conveying drainage from another area. For the purposes of this NWP, the loss of waters of the US includes the filled area plus waters of the US that are adversely affected by flooding, excavation, or drainage as a result of the project. Activities authorized by paragraph (i) through (iv) may not exceed a total of 1/4-acre loss of waters of the US. Waters of the US temporarily affected by filling, flooding, excavation, or drainage, where the project area is restored to preconstruction contours and elevation, is not included in the calculation of permanent loss of waters of the US. This includes temporary construction mats (e.g., timber, steel, geotextile) used during construction and removed upon completion of the work. Where certain functions and values of waters of the US are permanently adversely affected, such as the conversion of a forested wetland to a herbaceous wetland in the permanently maintained utility line right-of-way, mitigation will be required to reduce the adverse effects of the project to the minimal level.

Mechanized land clearing necessary for the construction, maintenance, or repair of utility lines and the construction, maintenance and expansion of utility line substations, foundations for overhead utility lines, and access roads is authorized, provided the cleared area is kept to the minimum necessary and preconstruction contours are maintained as near as possible. The area of waters of the US that is filled, excavated, or flooded must be limited to the minimum necessary to construct the utility line, substations, foundations, and access roads. Excess material must be removed to upland areas immediately upon completion of construction. This NWP may authorize utility lines in or affecting navigable waters of the US even if there is no associated discharge of dredged or fill material (See 33 CFR Part 322).

Notification: The permittee must notify the District Engineer in accordance with General Condition 13, if any of the following criteria are met:

(a) Mechanized land clearing in a forested wetland for the utility line right-of-way;

- (b) A Section 10 permit is required;
- (c) The utility line in waters of the US, excluding overhead lines, exceeds 500 feet;
- (d) The utility line is placed within a jurisdictional area (i.e., water of the US), and it runs parallel to a stream bed that is within that jurisdictional area;
- (e) Discharges associated with the construction of utility line substations that result in the loss of greater than 1/10-acre of waters of the US;
- (f) Permanent access roads constructed above grade in waters of the US for a distance of more than 500 feet; or
- (g) Permanent access roads constructed in waters of the US with impervious materials. (Sections 10 and 404)

Note 1: Overhead utility lines constructed over Section 10 waters and utility lines that are routed in or under Section 10 waters without a discharge of dredged or fill material require a Section 10 permit; except for pipes or pipelines used to transport gaseous, liquid, liquescent, or slurry substances over navigable waters of the US, which are considered to be bridges, not utility lines, and may require a permit from the USCG pursuant to Section 9 of the Rivers and Harbors Act of 1899. However, any discharges of dredged or fill material associated with such pipelines will require a Corps permit under Section 404.

Note 2: Access roads used for both construction and maintenance may be authorized, provided they meet the terms and conditions of this NWP. Access roads used solely for construction of the utility line must be removed upon completion of the work and the area restored to preconstruction contours, elevations, and wetland conditions. Temporary access roads for construction may be authorized by NWP 33.

Note 3: Where the proposed utility line is constructed or installed in navigable waters of the US (i.e., Section 10 waters), copies of the PCN and NWP verification will be sent by the Corps to the National Oceanic and Atmospheric Administration (NOAA), National Ocean Service (NOS), for charting the utility line to protect navigation.



REPLY TO
ATTENTION OF:

DEPARTMENT OF THE ARMY
U.S. ARMY ENGINEER DISTRICT, ALASKA
3437 AIRPORT WAY
SUITE 206 WASHINGTON PLAZA
FAIRBANKS, ALASKA 99709-4777

August 5, 2003

Regulatory Branch
North Section
D-2003-0750

Mr. Brent Koenen
354 CES/CEVN
2258 Central Avenue Suite 100
Eielson AFB, Alaska 99702-2299

Dear Mr. Koenen:

This is in response to your July 1, 2003, application for a Department of the Army (DA) permit on behalf of the United States Air Force, Eielson Air Force Base, to discharge fill material into approximately 0.004 acres of wetlands for the purpose of installing a utility line. The project is located in sections 19, 20, 21, 22 and 30, T. 2 S., R. 6 E., sections 24, 25, 26, 35, and 36, T. 2 S., R. 5 E., sections 2, 4, 5, 6, 9, 10, 14, and 15, T. 3 S., R. 5 E., and sections 1, 12, 14, 15, 16, 17, and 18, T. 3 S., R. 4 E., Fairbanks Meridian near Eielson Air Force Base, Alaska.

Department of the Army permit authorization is necessary because your project would involve placement of fill material into waters of the U.S. under our regulatory jurisdiction.

Based upon the information and plans you provided, we hereby verify that the work described above, which would be performed in accordance with the enclosed plan (sheets [1-2]), dated 1 July 2003, is authorized by nationwide permit (NWP) #12, Utility Line Activities. NWP #12 and its associated Regional and General Conditions can be accessed at our website at www.poa.usace.army.mil/reg or, at your request, a paper copy will be provided to you. Regional Conditions A through F, I, K through O apply to your project. You must comply with all terms and conditions associated with NWP #12.

Further, please note General Condition 14 requires that you submit a signed certification to us once any work and required mitigation are completed. Enclosure 1 is the form for you to complete and return to us.

-2-

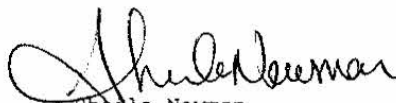
This verification will be valid for two years from the date of this letter, unless the NWP authorization is modified, suspended, or revoked.

Please take a moment to complete and return the enclosed questionnaire. Our interest is to see how we can continue to improve our service to you, our customer, and how best to achieve these improvements. Upon your request, you may also provide additional comments by telephone or a meeting. We appreciate your efforts and interest in evaluating the regulatory program.

Nothing in this letter shall be construed as excusing you from compliance with other Federal, State, or local statutes, ordinances, or regulations which may affect this work.

Please contact me at the letterhead address, at (907) 474-2166 or by FAX at (907) 474-2164, if you have any questions or to request a paper copy of the terms and conditions of NWP #12. For additional information about our regulatory program, visit our web site at www.poa.usace.army.mil/reg.

Sincerely,



Sheila Newman
Regulatory Project Manager

Enclosures

8.0 SHPO Concurrence Letter



DEPARTMENT OF THE AIR FORCE
PACIFIC AIR FORCES

3130-1RCOE
12 USAF

15 July 2003

Jim Nolke
354 CES/CEVP
2310 Central Ave Ste 100
Eielson AFB AK 99702-2299

Judith E. Bittner
State Preservation Officer
550 W 7th Avenue Suite 1301
Anchorage AK 99501-3565

RECEIVED
JUL 21 2003
OHA

Dear Ms Bittner

This letter is in response to a recommendation that your office made to the US Army Corps of Engineers during the public notice period of a wetlands permit application made by our office to construct a power line to portions of the Yukon Training Area, Fort Wainwright, Alaska.

Upon receiving the recommendations stated in your letter to the Corps of Engineers dated 8 July 2003, we researched the sites listed and collected the following information:

- XBD-93: As part of an archeological survey conducted by the US Army Alaska (USARAC) during 2002, this site was searched for based on the original survey information, but not relocated. ✓
- XBD-95: This site was also searched for during the referenced USARAC survey and was not relocated. ✓
- XBD-104: This site was located and resurveyed, and based on survey results it was determined to not be eligible for the National Register. Your office concurred with this finding in a letter to USARAC dated 30 July 2002. ✓
- XBD-230: Eielson AFB, Building 6396, is part of the Arctic Survival Training Facility and was built in 1995. ✓
- XBD-231: Eielson AFB, Building 6398, is also part of the Arctic Survival Training Facility and was built in 1992. ✓
- XBD-232: Eielson AFB, Building 6401, is also part of the Arctic Survival Training School and was built in 1992. ✓
- XBD-249: Nike Site, Bravo Battery (on YTA lands), was determined not eligible for the National Register on 11 December 2002. In addition, the proposed power line project would be on the opposite side of Quarry Road from the facility, with no poles closer than 200 feet. ✓

In addition to the information provided above, we have consulted with Russ Sackett of USARAC and he indicated that the entire corridor of the road that the power line project would follow was surveyed in 2002, up to the point where it enters the "impact area". Because of the inherent dangers associated with impact area lands the survey was not done in this area.

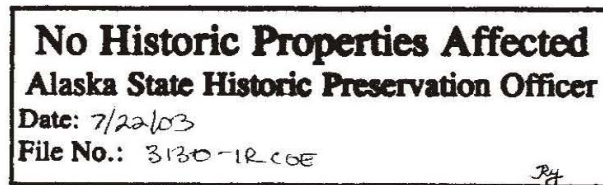
If there are any questions with regard to the information provided in this letter, please contact me at 907-377-3365.

Sincerely,



Jim Nolke
Environmental Planning Manager

cc: Sheila Newman, US Army Corps of Engineers
Russ Sackett, USARAC



3130-1R USAF

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